REPORT DOCUMENTATION PAGE

Form Approved
OPM No. 0704-0188

2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
Oct 93	Final

4. TITLE AND SUBTITLE
An Achievable Compliance Goal: Eliminating Notices of Violation Issued to the Army Under the Toxic Substances Control Act

5. FUNDING NUMBERS
DACW31-90-D-0076
PE 0902198D

6. AUTHOR(S)
Douglas M. Brown

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Logistics Management Institute
6400 Goldsboro Road
Bethesda, MD 20817-5886

8. PERFORMING ORGANIZATION REPORT NUMBER
LMI-CE211R2

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
David C. Guzewich
Chief, Environmental Compliance Division
U.S. Army Environmental Center, ENAEC-EC-A, Bldg. 4435
Aberdeen Proving Ground, MD 21010-5401

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT
A: Approved for public release; distribution unlimited

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

The total number of notices of violation (NOVs) issued to Army installations pursuant to the Toxic Substances Control Act has been small in comparison to the number of NOVs issued under other Federal regulations. This fact is primarily due to the limited scope of TSCA's direct impact on Army installations. The TSCA provisions regulating the management of polychlorinated biphenyl (PCB) are the ones that most directly affect Army installations; all of the Army's TSCA-based NOVs were issued for PCB-related violations concerning the management of power transformers and capacitors. The Logistics Management Institute investigated 39 NOVs issued to 18 installations under TSCA to determine whether systemic problems existed and whether programmatic changes would be needed to eliminate them. In almost every case, NOVs were received by the Army because of a lack of knowledge about TSCA requirements and/or because of the improper management of PCB material that was given to the local Defense Reutilization and Marketing Office (DRMO) for disposal.

Full compliance with TSCA-based regulations can be achieved swiftly and completely. In order to accomplish this, we recommend adequate training programs, a requirement for staff members to complete TSCA training or certification prior to being designated as their installations' responsible individuals, and an integrated waste management system that facilitates coordinated actions between the Army and DRMO.

14. SUBJECT TERMS
Environment, compliance, TSCA, NOV, training

15. NUMBER OF PAGES
81

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	UL

5

AN ACHIEVABL COMPLIANCE GOAL: Eliminating Notices o Viola n Issued to the Army Under the Toxic ubsta ces Control Act

Douglas M. Brown

LMI

October 1993

An Achievable Compliance Goal

Eliminating Notices of Violation Issued to the Army Under the Toxic Substances Control Act

CE211R2

Douglas M. Brown

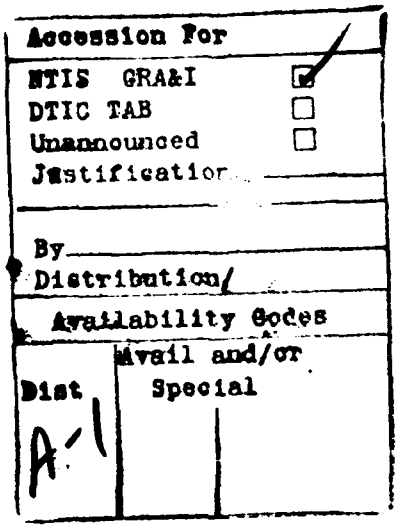
Prepared pursuant to U.S. Army Corps of Engineers Contract DACW31-90-D-0076. The views expressed here are those of the Logistics Management Institute at the time of issue but not necessarily those of the U.S. Army Corps of Engineers.

Logistics Management Institute
6400 Goldsboro Road
Bethesda, Maryland 20817-5886

PREFACE

This report is the second of our assessments of Army compliance challenges with regard to specific regulatory programs; it is the fifth in our overall environmental compliance management series.

A large portion of the data gathering for this report was done by Mr. Anderson Caldwell, a consultant with LMI.



Executive Summary

AN ACHIEVABLE COMPLIANCE GOAL: ELIMINATING NOTICES OF VIOLATION ISSUED TO THE ARMY UNDER THE TOXIC SUBSTANCES CONTROL ACT

The total number of notices of violation (NOVs) issued to Army installations pursuant to the Toxic Substances Control Act (TSCA) has been small in comparison to the number of NOVs issued under other Federal regulations. This fact is primarily due to the limited scope of the TSCA's direct impact on Army installations. The TSCA provisions regulating the management of polychlorinated biphenyl (PCB) are the ones that most directly affect Army installations; all of the Army's TSCA-based NOVs were issued for PCB-related violations concerning the management of power transformers and capacitors. The Logistics Management Institute investigated 39 violations from 18 installations to determine whether systemic problems existed and whether programmatic changes would be needed to eliminate them.

In almost every case, NOVs were received by the Army because of a lack of knowledge about TSCA requirements. The TSCA requirements are not difficult to understand. And, once NOVs are received, installations quickly come into and remain in compliance. In many cases, NOVs were received because of the improper management of PCB material that was given to the local Defense Reutilization and Marketing Office (DRMO) for disposal. Installation staffs, lacking adequate records and/or waste management systems, tended to forget about those PCB materials, which once out of sight are forgotten.

Unlike the other environmental statutes and regulations (where some form of violation is almost inevitable if an installation is stringently scrutinized), full compliance with TSCA-based regulations can be achieved. The elimination of TSCA-based NOVs can be accomplished swiftly and completely. However, two primary obstacles exist: installation staff members charged with the responsibility for the TSCA program are inadequately trained, and coordination with DRMO staff concerning the handling and disposal of PCB material is inadequate.

We recommend that the Chief, Environmental Compliance Division take the following actions:

- Identify, or sponsor the development of, adequate training programs that will provide installation staff members with the needed skills.
- Solicit the support of the Army's Director for Environmental Protection and the Deputy Assistant Secretary of the Army for the Environment for the promulgation of Army regulations requiring staff members to complete TSCA training or certification prior to being designated as their installations' responsible individuals.
- Initiate a dialogue with the Defense Logistics Agency to develop a comprehensive and integrated waste management system that includes PCB management and that facilitates coordinated actions between Army and DRMO staff members at the installation level.

CONTENTS

TABLES

FIGURES

CHAPTER 1

OVERVIEW OF THE TOXIC SUBSTANCES CONTROL ACT

Congress enacted the Toxic Substances Control Act (TSCA)[1] in 1976 in response to a number of tragic events in the late 1960s and early 1970s – events that resulted in the loss of human life, hazards to human health, and potential damage to the environment. In the late 1960s, organic mercury found its way into the food supply, soil, and water. In Japan, in 1969, cooking oil had inadvertently been contaminated with polychlorinated biphenyl (PCB) when an electrical transformer leaked; this resulted in the deaths of some people and damage to the central nervous systems of other people. In 1971, in the United States, a ventilation system at a feed facility leaked PCB-contaminated coolant, resulting in the contamination of about 60,000 eggs and poisoning of about 77,000 chickens. Some of those contaminated products had already reached store shelves where they must have been purchased and consumed.

SCOPE OF TOXIC SUBSTANCES CONTROL ACT

The TSCA was intended to close the gaps in the existing regulatory structure. Existing regulations attempted to control production processes by specifying unacceptable outcomes (levels of pollution). TSCA was established to control specific substances that were known to be inherently hazardous and to prevent the proliferation of new hazardous substances. Thus, TSCA took a new direction in attempting to control the use and manufacture of the chemicals themselves.

In addition to the TSCA and its numerous statutory amendments, hundreds of pages of regulations have been issued to implement the TSCA. The TSCA has not been delegated to the states for implementation and control. Therefore, no additional requirements are imposed. Because the statutory and regulatory provisions are very specific and very intertwined, reference to either usually incorporates reference to both. Therefore, for the remainder of this report, we will use the term "TSCA" to include both statutory and regulatory provisions.

---

[1]Codified at 15 U.S.C. 2600–2671.

Prior to TSCA, no Federal statute regulated the manufacture, distribution in commerce, or handling of hazardous chemicals in use (as opposed to waste substances). The regulations that existed [i.e., the Clean Air Act; the Clean Water Act (CWA); the Resources Conservation and Recovery Act (RCRA); and the Comprehensive Environmental Response, Compensation, and Liability Act] addressed chemicals at the back end of the industrial use process, when chemicals were the byproducts of some process and were being released into the environment. No testing procedures had been formulated to evaluate the potential adverse effects of new chemicals on human health and the environment prior to the chemicals' development, manufacture, and subsequent distribution into commerce.

The TSCA provided the Environmental Protection Agency (EPA) with the regulatory framework to develop an effective tool for identifying the potential risks posed by the manufacture and use of chemicals and their byproducts. Programs were designed to collect information about chemical toxicity, to evaluate the extent to which human beings and the environment are exposed to those chemicals, to assess the risks, and to implement appropriate control measures.

The TSCA also gave EPA authority to regulate the production of new chemicals, to control the "new use" criteria for chemicals already in use, and to create an inventory of chemicals in use in the United States prior to the enforcement of the regulations for new chemicals.

Premanufacture Notification Provisions

The EPA was required to establish an inventory of existing chemicals, to be completed in May 1979. All chemicals introduced after that time (defined, then, as anything not on the list) would be designated as new chemicals.

Chemical manufacturers must provide EPA with a premanufacture notice at least 90 days prior to the manufacture or sale of a new chemical. Manufacturers are required to perform testing. They must present a formal report describing their intentions and testing results to the EPA. The testing requires analysis for persistence, acute toxicity, and potential carcinogenic effects, and where instances of significant adverse impacts to health and the environment are on record elsewhere or are observed during the testing, the manufacturers must address those instances in

their reports. Additionally, manufacturers must maintain these significant adverse impact reports for 30 years.

The EPA must first decide whether the test data presented by the manufacturer are adequate to make a determination about the new chemical's potentially adverse effects on human health and the environment. If EPA determines that the data are adequate, they proceed by publishing them in the *Federal Register*. If EPA determines that the test information is inadequate, the manufacturer must provide more information.

The EPA has broad-based authority to determine the action to follow for a particular chemical. If EPA finds that a chemical presents an unreasonable risk to human health and/or the environment, EPA can issue a direct ban on the production, use, sale, or disposal of that chemical. The EPA can also place a limit on the quantities of a specific chemical allowed to be produced.

"Significant New Use" Rule

The "significant new use" provisions of the TSCA regulations address the situation where chemicals have an authorized use under the final requirements, but the manufacturer wants to put that chemical to a new use. While this could affect the Army if it invents a new use for a chemical (particularly as a weapon), under the regulations, the duty to report new uses to EPA falls to the manufacturers. Weapons research facilities such as (but not limited to) Aberdeen Proving Ground and Fort Detrick must be aware of the need to keep manufacturers informed about any new uses found for chemicals. Even simple chemical modifications, such as the Engineers' development of explosive mixtures for clearing mines, might raise this "significant new use" issue.

Control of Hazardous Chemicals

The TSCA directly addresses the manufacturing, distribution, use, and required labeling of four specific substances: asbestos; 2,4,5-trichlorophenoxy acetic acid; chlorofluorocarbons (CFCs); and PCB. Because TSCA's PCB provisions have a major impact on the Army, they are discussed in a separate section of this chapter.

Asbestos

Under the Asbestos Hazard Emergency Response Act (AHERA), now Title II of TSCA, schools are required to conduct inspections for asbestos-containing materials. The results of those inspections must be posted publicly and when necessary, responsive actions must be initiated. Such inspections were conducted by the Army at considerable expense. In 1986, EPA moved to ban the manufacture and import of asbestos-containing materials, thus eliminating the inclusion of those materials in subsequent construction materials. It was EPA's intention to eliminate 94 percent of asbestos-containing materials by 1996.

2,4,5-trichlorophenoxy acetic acid

This acid is a byproduct of the manufacture of the herbicide silvex, a major contaminant found at Love Canal, the site that gave rise to the Superfund. Under the TSCA requirements, a 60-day notification must be given to EPA prior to the disposal or transfer of this chemical. As far as we can determine, the Army does not use this chemical in any significant quantity. Some of it may be in use for laboratory or research purposes; but, in general, this substance is not an issue for the Army.

Chlorofluorocarbons

Because of the concern about the damage occurring to the ozone layer, restrictions on the manufacture and use of CFCs are addressed in the TSCA. Typically, CFCs are used in refrigeration and air conditioning systems and in urethane foams. In the military context, one of the more significant applications for CFCs is in high-performance fire extinguishers, especially within confined spaces in high-risk areas such as aircraft cockpits and tank turrets.

POLYCHLORINATED BIPHENYL PROVISIONS

The PCB provisions of the TSCA regulations basically prohibit the manufacture, processing, and distribution of any PCB (or PCB-containing item) within the United States, regardless of concentration. However, if the PCB is totally enclosed and inaccessible (as in electronic capacitors), distribution may be permissible. Other authorizations and exclusions exist in 40 C.F.R. 761.30. The concentration criteria shown in Table 1-1 were established for the classification of potential PCB and PCB-laden items.

TABLE 1-1

ACCESSIBLE CONCENTRATIONS OF PCB-CONTAINING ITEMS

Statutory classification	Concentration of PCB
Non-PCB material	Less than 50 ppm of PCB
PCB-contaminated material	50 to 499 ppm of PCB
PCB	Greater than 500 ppm of PCB

Note: ppm = parts per million.

Table 1-2 shows the significant events that have taken place in the development of PCB legislation.

Users and owners of PCB-filled electrical transformers, capacitors, and switches, etc., are permitted to maintain their equipment for its working life, as long as the equipment does not leak PCB or require any major repairs. Table 1-3 shows a very abbreviated summary of the actions required by the regulations for those facilities with PCB-laden items in service.

Inspection of Active Transformers

The PCB-filled transformers that remain in use as permitted by TSCA (i.e., they are fully enclosed) must be inspected at least quarterly; however, a minimum of 30 days must pass between inspections. A visual inspection of each transformer must be performed specifically for the identification of leaks and spills. Shutdown of the transformer is not necessary for completion of the inspection. If any leaks are identified, corrective action should be initiated as soon as possible, but no later than 48 hours after the spill or leak is first identified.

The required inspection frequency may be decreased if through testing it is proven that the transformer holds 100 percent of its PCB containment capacity, or if the transformer fluid has been serviced to reduce its PCB concentration to below 50 parts per million (ppm). The frequency may also be allowed to increase when

TABLE 1-2

PCB REGULATORY MILESTONES

Date	Effect of final regulation
July 1978	The manufacture, processing, distribution in commerce, or use of any PCB-laden items, except in a "totally enclosed manner," is prohibited. Marking requirements are established for a. PCB containers, b. PCB transformers, c. equipment containing PCBs, and d. storage areas used to store PCB and PCB items for disposal (see 40 CFR part 761.40).
1980	The EPA requests information from industry owners concerning "weeping" transformers. (EPA received an 80 to 90 percent positive response.) The purpose is to determine if weeping is a significant issue that must to be regulated.
1982	The regulation a. prevents all PCB electrical components from being located near food or feed sources after October 1985, b. allows indefinite use of totally enclosed transformers as long as weekly self-inspections are performed, c. authorizes other electrical equipment to remain in use until useful life is exceeded, d. ensures that large transformers remaining in use are inspected quarterly, e. allows storage as a means of disposal for nonleaking equipment located in outside storage facilities, and f. establishes 3-year holding requirement of records once disposition of equipment occurs.
September 1984	The regulation a. redefines "totally enclosed" and b. requires removal of combustibles near transformers because of concerns about fires occurring on, or near transformers.
July 1985	Restricts the use of enclosed PCB transformers in commercial buildings.
1 December 1985	Requires that use and storage of PCB transformers that pose an exposure risk to food or feed are prohibited. Vault doors, machinery room doors, fences, and any other means of access to the containment area of PCB and PCB-contaminated transformers must be marked.
December 1985	Requires that all PCB transformers be registered with the fire response personnel having primary jurisdiction.

TABLE 1-2

PCB REGULATORY MILESTONES (Continued)

Date	Effect of final regulation
5 February 1990	Requires that all PCB or PCB-laden items in service (or to be disposed of) be inspected on a quarterly basis. Owners should develop annual records and annual written document logs describing the disposition of PCB and PCB-laden items. The annual written document must be prepared for each facility by July 1, and it must cover the previous calendar year.
October 1990	Requires that lower secondary voltage network PCB transformers are not located in sidewalk vaults and are not without sustained fault protection. Those transformers must be registered with the EPA's regional administrator.
October 1990	Requires the following of retrofill transformers: a. limited to 18 months of use, b. must be tested at 3 months to ascertain PCB concentration, and c. if found to exceed 500 ppm limit must be reclassified.
October 1990	Requires the following of radial PCB transformers (high secondary voltage) in use in, or near commercial buildings: a. must be equipped with protection to avoid rupture by sustained low current faults; b. must have a pressure and temperature sensor (or equivalent technology) to monitor the system; c. must have disconnect equipment to ensure complete de-energization should a sustained current fault occur; and d. if the transformer is taken out of service, it must be disposed of. Requires the following of lower secondary voltage network PCB transformers located in sidewalk vault in use in, or near commercial buildings: a. must be equipped with protection to avoid rupture by sustained low current faults; b. must have a pressure and temperature sensor (or equivalent technology) to monitor the system; c. must have disconnect equipment to ensure complete de-energization should a hazardous event occur; and d. if transformer is taken out of service, it must be disposed of.
October 1993	Requires the following of lower secondary voltage network PCB transformers located in sidewalk vaults in use in, or near commercial buildings: a. must be equipped with protection to avoid rupture by sustained low-current faults; b. must have a pressure and temperature sensor (or equivalent technology) to monitor the system; c. must have disconnect equipment to ensure complete de-energization;

TABLE 1-2

PCB REGULATORY MILESTONES (Continued)

Time period	Effect of final regulation
October 1993 (continued)	d. if the transformer is taken out of service, it must be disposed of; e. must be protected to avoid rupture caused by high-current faults; and f. must have a current-limiting fuse to detect high, sustained circuit faults.

TABLE 1-3

SUMMARY OF PCB EQUIPMENT REGULATORY REQUIREMENTS

Required action type	Capacitors	Transformers	PCB-laden material
Sampling	Perform initial characterization of potential PCB and PCB items	Perform initial characterization of potential PCB and PCB items	Perform initial characterization of potential PCB and PCB items
Reporting	Annual report Disposal manifests	Annual report Disposal manifests	Annual storage and disposal report
Inspection	Disposal/storage inspection for leaks	In-use inspection for leaks	Inspection of material for PCB prior to disposal
Inventory	Annual	Annual	Not allowed to be stored as waste over 1 year

transformers previously designated as PCB-contaminated are determined (during subsequent investigation) to contain PCB concentrations in excess of 500 ppm.

Recordkeeping

All required inspections must be documented using authorized EPA forms. All records of inspections and maintenance histories must be maintained for at least 3 years after the certified disposal of a designated transformer. Those records must be made available to EPA inspectors upon request, and they should be maintained at the facility where disposal or storage occurred. Additionally, it would be prudent to maintain record copies at the environmental office. Although the certificate of disposal itself is also subject to the 3-year period, the never-ending responsibility for cleanup under current environmental laws suggests that disposal certification records should be maintained on-site at installations indefinitely.

An annual log book must be maintained, registering all pertinent documents: material manifests, final disposition documents, periodic inventories and inspections, and records of regulator inspections and their outcomes.

PCB Spill Cleanup

In April 1987, EPA established its PCB spill cleanup policy. All PCB spills, whether reportable or not, must be properly and promptly cleaned up, with cleanup activities being initiated within 24 hours of spill identification.

Spills resulting in the release of material containing PCB at concentrations of 50 ppm or greater must be reported immediately to the EPA. The regional EPA offices have the authority to establish standards for cleaning up the spill site, and the cleanup standards may be more stringent than those specified by the regulations, based on the regional administrator's finding that additional cleanup of the spill is needed to prevent unreasonable risk. The Regional Administrator also has the authority to lessen the stringency or provide alternative requirements in situations where that may be warranted.

Under the National Contingency Plan, all spills involving 10 or more pounds of PCB must be reported to the National Response Center. Spills less than 10 pounds, other than those specifically identified by the regulations, must be cleaned up in accordance with the regulations, but EPA need not be notified.

At the completion of the cleanup, the responsible party (the installation) must document the cleanup activities with records and certification of decontamination. These records and certificates must be retained for 5 years.

Once it has been certified that cleanup has been conducted, a post-cleanup sampling program must be initiated.

ARMY EXPOSURE TO TSCA PROVISIONS

Typically, chemicals used by Army installations already have well-defined applications (e.g., solvents, oils, greases, degreasers, paints, and fuels). While some Army installations are involved in manufacturing processes, they tend to employ chemicals that are already included in manufactured products that serve as the Army's "raw materials"; Army installations are generally not in the chemical manufacturing business.[2] Thus, the Army's exposure to TSCA is through the post-manufacture provisions, chiefly those covering asbestos and PCB. For the purpose of this report, which emphasizes correction of violation conditions, we focus on PCBs.

Army Uses of PCB Material

Although PCB is contained in other types of equipment found on Army installations (chiefly fluorescent light ballasts), all of the notices of violation (NOVs) issued under TSCA are based on violations in the management of power transformers and capacitors. When these other types of equipment were put into place, U.S. electrical construction and manufacturing codes were employed. They were designed and built by civilian contractors; so they use the same power lines, designs, and component parts (e.g., transformers, capacitors, and switches). No special designs particular to Army installations exist. The Army employs conventional U.S. practices using military specification (MILSPEC) and U.S. electrical codes for design.

Polychlorinated biphenyl was used in electrical equipment (such as transformers and capacitors) because they are fire-retardant and serve as an excellent dielectric fluid. Even when not used in higher concentrations, traces of PCB

[2]Some installations do create chemicals as part of research or the production of chemical warfare weapons, but these activities are not addressed by TSCA.

will enhance the performance and reduce the flammability of other dielectrics – notably mineral oil, which was widely used as the main dielectric medium.

Although PCB-laden items are labeled, in many cases those having primarily non-PCB base materials (e.g., mineral oil) were labeled only with the primary material. In some cases, installation staff members assumed that this labeling implied that no PCB was present. In addition to those equipment items intended to contain PCB, others became contaminated as fluid residues from PCB-containing items became commingled with non-PCB dielectrics. This occurred over years of servicing and changing the fluids in the equipment. These two circumstances – incorrectly assuming equipment to be PCB-full and inadvertent contamination of previously clean equipment – led to the existence of numerous unidentified PCB items that would later prove to be the source of NOVs.

PCB REMOVAL PRACTICES

When TSCA requirements were established in 1976, Army installations (some more rapidly than others) began sampling their transformers in order to identify their PCB status.[3] The PCB transformers that did not meet the "totally enclosed" regulatory requirements were removed from service. In some cases, the transformers were refilled with non-PCB fluids, and the old PCB-contaminated fluids were removed for disposal. In other cases, the entire transformer was removed from service; the fluids were drained and disposed of and the transformer's metal "carcass" was cleaned out and disposed of as conventional scrap. Where the cleanout process was inadequate, these transformer carcasses would be found by regulators to be PCB-contaminated and installations could be cited for improper storage or disposal of contaminated material.

SUMMARY OF THE PCB REQUIREMENTS OF TSCA

The chief burden on the Army resulting from the TSCA is the need to manage the progressive elimination of PCB items. The inspection and recordkeeping requirements, given an effective inventory of items, are not especially demanding.

---

[3]However, the intent of the sampling program was to identify whether PCB-containing items exceeded regulatory ppm thresholds. In many cases, equipment believed to be PCB-free was not sampled at all. That equipment remained in service and was not put on any inventory listings. As noted earlier, the assumption that the equipment was PCB-free was not always correct.

Figure 1-1 summarizes the TSCA regulatory impact in terms of how Army installation staffs must carry out the program.

The Army is trying to promote modernization of electrical power transmission systems on its installations. This requires the complete removal of PCB and PCB-contaminated transformers. The replacement of PCB and PCB-contaminated transformers will be accomplished with equivalent non-PCB, liquid-cooled transformers or dry (solid) transformers. The Army's modernization program, while enhancing cost-effectiveness and reliability, also has the advantage of moving away from the use of materials regulated by TSCA.

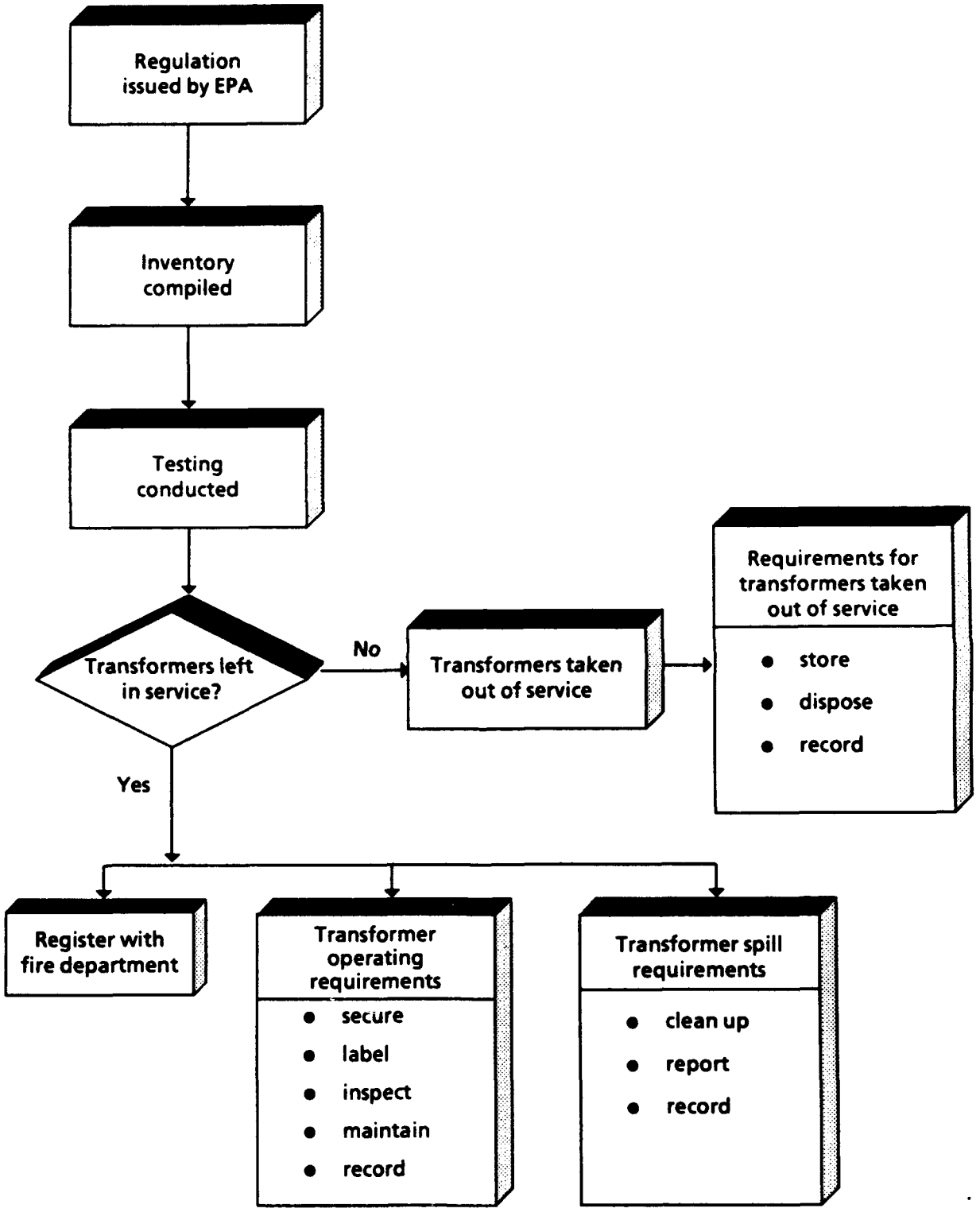


FIG. 1-1. PCB REGULATION DEVELOPMENT PROCESS

CHAPTER 2

HISTORICAL DATA

The *Defense Environmental Status Report* (DESR) tracked environmental compliance efforts at MACOM and Army levels for input to DoD Reports to Congress, between 1985 and 1990. Appendix A consists of DESR data collection sheets pertaining to TSCA. Appendix B summarizes DESR data between 1988 and 1990 for each MACOM.

Prior to the publication of the DESR, no mechanisms were available to track environmental compliance within the Army. From the early 1970s, when the Nixon Administration enacted the environmental legislation that still forms the core of our present regulatory system, until the publication of the DESR in 1984, no environmental information tracking systems existed. Fundamental to any data tracking is the establishment of an initial baseline, which did not occur until the DESR was put into place.

The TSCA-related information input to the DESR was quantitative, focusing on the total stored quantities of various concentrations of liquid and solid PCB located at installations, the disposal quantities, and the generated quantities. Table 2-1 shows this information for the Army. Clearly, discrepancies between installation- and Defense Property Disposal Office (DPDO)-report quantities occur.[1] Those discrepancies foreshadow a loss of material control, with subsequent NOVs being issued to the Army under the TSCA PCB provisions, primarily due to lack of coordination between the installation and the DPDO/DRMO.

The Army changed the report format in 1987, introducing new data elements for 1988 and 1989 (however, 1988 data were not available in the historical record). The new data elements sometimes permit the computation of data *similar* to that available earlier. Table 2-2 shows the DESR data for 1989. Because the available data are suspect (such as, for instance, no PCB in storage in 1986 as shown in

[1]The present-day Defense Reutilization and Marketing Service was entitled the Defense Property Disposal Office at the time of the DESR.

TABLE 2-1

DEFENSE ENVIRONMENTAL STATUS REPORT TOXIC SUBSTANCES CONTROL ACT DATA ELEMENTS

(Army totals)

Liquid and solid PCB	Stored quantities (gallons)			
	1984	1985	1986	1987
PCB liquid in storage for disposal	17,365	31,660	18,168	25,598
PCB liquid in storage (>50 ppm of PCB)	9,218	22,954	22,191	35,708
PCB solid waste in storage for disposal	71,233	31,592	389,679	66,183
DPDO response: PCB liquid in storage for disposal	43,315	35,612	0	14,294
DPDO response: PCB liquid in storage (>50 ppm of PCB)	40,646	20,608	11,050	11,839
DPDO response: PCB solid waste in storage for disposal	3,203	601	3,497	3,152

Note: > = greater than; ppm = parts per million.

Table 2-1), it would be inappropriate to draw any significant statistical conclusions using the data sets.

The DESR does not provide any information on TSCA NOVs. To address the NOV issue, we had to perform a manual search of the NOVs on file at the Army Environmental Center. A summary of the data concerning those NOVs is shown in Table 2-3. At the aggregate level, we found that the number of NOVs issued to Army installations under TSCA PCB provisions increased significantly in 1990. That may have occurred because many of the reporting requirements for transformers came into effect in 1990, along with increased monitoring requirements for retrofilled transformers and sidewalk vaults containing low secondary voltage transformers. The reduced number of NOVs in 1992 may reflect a greater general understanding of the TSCA rules (and an elimination of PCB-laden items) by that time. Because neither the data systems nor the text of the NOVs offers the information needed to validate these possibilities, a detailed interview with each installation was the only effective source of information.

TABLE 2-2

DEFENSE ENVIRONMENTAL STATUS REPORT TOXIC SUBSTANCES CONTROL ACT DATA ELEMENTS FOR 1989

(Army totals)

Liquid and solid PCB	Stored quantities, 1989 (gallons)
DPDO response: PCB solid waste in storage for disposal	711
PCB liquid in storage (>500 ppm of PCB)	101,919
PCB liquid in storage (between 50 and 500 ppm of PCB)	37,579
PCB solid in storage (>500 ppm of PCB)[a]	67,632
Solid in storage (between 50 and 500 ppm of PCB)[a]	82,635
PCB liquid disposed of (>500 ppm of PCB)	19,500
PCB liquid disposed of (between 50 and 500 ppm of PCB)	3,434
PCB solid disposed of (>500 ppm of PCB)[a]	17,968
PCB solid disposed of (between 50 and 500 ppm of PCB)[a]	107,360
PCB liquid disposed of by DLA (>500 ppm of PCB)	44
PCB liquid disposed of by DLA (between 50 and 500 ppm of PCB)	369
PCB solid disposed of by DLA (>500 ppm of PCB)	9,957
PCB solid disposed of by DLA (between 50 and 500 ppm of PCB)[a, b]	Unavailable

Note: > = greater than; ppm = parts per million; DLA = Defense Logistics Agency.
[a] Quantity in cubic feet.
[b] This item is on the data sheets (see Appendix A), but no data were reported.

TABLE 2-3

NOVs RECEIVED UNDER THE TOXIC SUBSTANCES CONTROL ACT

Type of NOV	Numbers of NOVs received				
	1988	1989	1990	1991	1992
Leaks	3	0	0	3	0
Record keeping and reporting	0	0	10	4	1
Disposal, storage, and cleanup	0	0	6	8	1
Labeling	0	0	4	2	0
Inspection and inventory	0	0	3	1	0
Total	3	0	23	18	2

CHAPTER 3

CURRENT VIOLATION PROBLEMS

Between 1988 and 1992, NOVs issued to Army installations under TSCA were related to the PCB provisions. No NOVs were issued to Army installations under the other provisions of the TSCA (including AHERA), and none were issued for mishandling the other three regulated substances.

Army Environmental Center files contained 39 NOVs issued to 18 installations for violations of TSCA between 1988 and 1992. Table 3-1 summarizes the root causes of those 39 NOVs. Appendix C summarizes the circumstances that led to each NOV.[1] In general, NOVs are issued because installation staff members fail to conduct proper inspections of their storage facilities, fail to document visual inspections, and maintain poor administrative filing systems. The corrective measures taken did not adversely affect the Army's mission in any instance.

ROOT CAUSES OF NOVs

When a violation is an isolated event, it can be remedied directly; no further concern is raised. However, in earlier studies we found that many apparently unrelated NOVs are often symptoms of larger, systemic management problems.

After evaluating the NOVs, we identified eight consistent root causes for receiving the NOVs. Those root causes are described below:[2]

Contract management failures (C) consist of poor contract management, the contractor's failure to satisfy contractual agreement, a poorly written statement of work, the contracting officer is not familiar with environmental contracts, contract

[1]Table 2-3 shows a total of 46 NOVs on file. In seven cases, installation staffs had completely turned over since the NOVs were issued. Current staff members were unable to provide insight into the NOV findings or studies.

[2]In earlier studies, we found equipment malfunctions and the simple lack of technical solutions to pollution problems to be the other primary causes of NOVs. No such instances were found during our research for this report. The high number of instances of coordination failures between DRMO and the installation staff induced us to create a new root cause category for this report.

TABLE 3-1

SUMMARY OF ROOT CAUSES OF NOVs

Installations	Number of violations		Root causes							
	Procedural and administrative	Pollution or loss of control	C	D	F	I	K	L	R	S
1.	1	0					X		X	
2.	1	0		X			X			
3.	0	1					X			
4.	2	1	X	X			X			
5.	1	1				X				
6.	1	0				X	X			
7.	2	0					X	X		
8.	1	0							X	
9.	5	0			X		X	X		
10.	0	1	X				X			X
11.	3	0					X			
12.	3	1	X				X			
13.	1	0								
14.	4	4	X	X		X	X			
15.		1					X	X		
16.	1	0					X			
17.	1	0		X	X		X	X		
18.	1	1					X			
Total	28	11	4	4	2	3	15	4	2	1

Note: C = contract management failures; D = DRMO-installation coordination failure; F = lack of resources/funding; I = inventorying failures; K = lack of environmental knowledge; L = lack of management attention and poor supervision; R = regulator error and/or confusion; and S = changed environmental standards.

fraud (where contractors did not perform the required work), lengthy or otherwise unresponsive Army contracting processes, and any other contract-related factors.

DRMO-installation coordination failure (D) entails loss of equipment or material stored in DRMO due to poor communications, reporting, or inadequate knowledge by either party of their joint responsibilities.

Lack of resources/funding (F) prevents the taking of required actions, delays project development, and can cause other deficiencies.

Inventorying failures (I) result from failures to identify all regulated equipment.

Lack of environmental knowledge (K) is caused by the failure to assign environmental professionals, by inexperienced and/or inadequately trained personnel, by the environmental staff's failure to obtain the required regulatory knowledge (due to understaffing), by poor record keeping and tracking, and by other deficiencies.

Lack of management attention and poor supervision (L) are caused by according a low management priority to environmental compliance, by a lack of interest from the installation's leadership, by poor worker discipline or work ethics, and by other supervision failures.

Regulator error and/or confusion (R) causes NOVs to be inadvertently issued. Regulators sometimes make mistakes and/or give incorrect, untimely advice.

Changed environmental standards (S) cause citations to be issued for contamination levels previously considered acceptable under earlier regulations.

In discussions with the environmental staffs at the installations, we found that many violations of the TSCA are minor details that are immediately corrected. A citation such as failure to label properly is an example of an NOV that can be corrected immediately. Such NOVs result from a lack of attention to detail and from occasional human errors. If these were the only offenses committed, regulators might ignore them; the Army should certainly not preoccupy itself with them.

Most NOVs, however, have not resulted from momentary inattention. The mistakes made have caused the failure of the installation's entire TSCA compliance effort. The mistakes have had one primary cause: inadequate training for installations' environmental staffs. For example, routine inspections are not being performed simply because the staff does not know that they are required. Many appear to have received no training in TSCA. With some basic training, environmental staff members can learn to respond to selected provisions of the TSCA regulations that focus on handling and disposing of PCB and PCB-laden items (often through contractors – who are supposedly knowledgeable). Compliance with TSCA is not particularly difficult. Once staff members become aware of the requirements,

the problems are soon corrected. A major (and sometimes resented) aspect of the regulator's job is actually being an educator to the installations' environmental staffs.

Installations have been in a reactive mode. Not until an inspection is performed by a regulator and an NOV is issued does action occur to come into compliance. Most installations have now installed effective TSCA management programs.

Full compliance with the TSCA is very achievable. The Army should not expect anything less from its installations. The biggest obstacle to achieving full compliance is the continuing practice of putting inadequately trained people in charge of regulatory programs.

ANALYSIS OF NOVs AND SOLUTIONS

A fault analysis (shown in Figure 3-1, which is based on the structure presented in Figure 1-1) illustrates the relationships between regulatory requirements and the potential for violations. This report does not address specific solutions to specific violations; a more detailed study is needed to provide recommendations about issues like the scope or content of training, institutional provisions needed to detect errors or failing programs, and so forth. In Chapter 6, we do provide some programmatic recommendations to address the most consistent deficiencies. Implementation of those recommendations should eliminate almost all NOVs issued under the TSCA.

The Toxic Substances Control Act regulations do not change as frequently or in as great detail as the other more complicated regulations (e.g., RCRA, CWA, and SDWA). Typically, once installations are in compliance with the TSCA regulations, repeat NOVs do not occur.

OPERATIONAL NOVs

About one-quarter of the NOVs (11 of 39) were issued for PCB contamination, or the installation's total loss of control over PCB-laden items that could have produced contamination (even if they did not in fact do so). Typical violations include failure to dispose of stored PCB transformers within the 1-year time frame, failure to remove in-use transformers by the required regulatory cutoff date, failure of a storage facility to meet design specifications, and improper disposal of cleanup residue. The typical root cause of these violations is management failure in assuring effective communication between installation and DRMO staff members. This is often

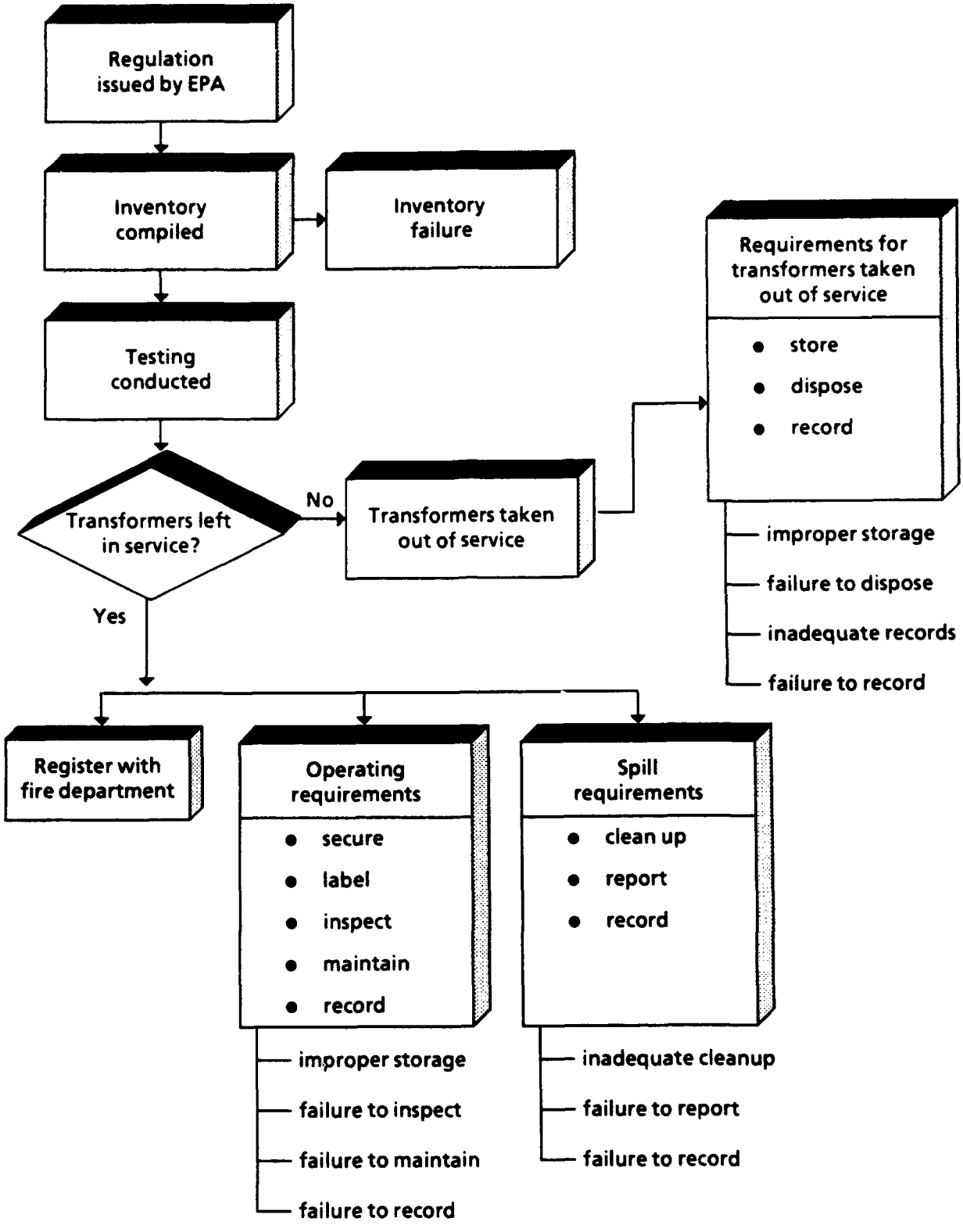


FIG. 3-1. NOTICE OF VIOLATIONS SOURCES

exacerbated by a lack of knowledge of TSCA issues on the part of those staff members.

ADMINISTRATIVE NOVs

Administrative NOVs are most often issued for improper recordkeeping, reporting, labeling, inspections, and inventories. Typically, the major root cause for administrative NOVs is the lack of knowledge (especially in-depth understanding) of TSCA regulations; sometimes, responsible staff members do not even know that a program exists. In some cases, environmental staff members are overloaded with work in other (apparently higher priority) regulatory areas at the expense of focusing greater effort on TSCA compliance.

It can be argued that these (administrative TSCA) requirements are simply procedural and, therefore, failure to comply is immaterial. In fact, however, review of the noncompliance cases shows that there were several instances of PCB contamination and even more instances of loss of custody of the PCB material; most of these stem from sloppy recordkeeping or failure to correctly perform administrative details.

The purpose of the administrative provisions is to make it difficult to have a pollution problem. The Army's experience with PCB shows how effective those provisions are because the failure to follow them often led to actual or potential contamination situations.

PROGRAM MANAGEMENT ISSUES

Two areas are of general concern regarding the Army's efforts to manage PCB programs. One concern is a significant failure to exercise reasonable control over support contractors; the other is the tremendous gap in cooperation among installation staffs and the servicing DRMOs.

In several cases, contractors were assumed to be competent, assumed to be performing the assigned tasks, and assumed to have completed the necessary paperwork. In several other cases, none of these assumptions was tested prior to paying the contractor. Contractors must be qualified by experience; if not, detailed oversight is needed. Even if they are qualified, some supervision is required.

While many contractors perform all of the assigned work, some are tempted to cut corners (by reducing their disposal cost). For example, if contractors can throw waste in the bushes and remain secure that nobody will do anything about it, they may be tempted to do so. The fact that a contractor is involved does not relieve the installation staff of the obligation to perform an effective PCB inventory or to complete all required paperwork (e.g., disposal certificates).

The Army has a major challenge ahead in dealing with waste material disposal. The DRMO is in the middle of the disposal cycle, but with little apparent information flow. The same problem is often seen concerning hazardous waste under RCRA's Subtitle C. An integrated waste management system in coordination with DLA is vital if the Army hopes to solve its waste tracking problems.

CHAPTER 4

SIGNIFICANT NOVs AND NONCOMPLIANCE CASES

In this series of reports on NOV analysis, this chapter is reserved for a discussion of the major categories of violations. For regulations (e.g., RCRA) where more NOVs are issued, it is not possible to review every NOV (as we have done in this report). In such reports, this chapter will identify the most frequent or most serious cases of noncompliance.

CHAPTER 5

FUTURE CHALLENGES IN COMPLYING WITH TSCA REGULATIONS

As PCB-laden items exceed their useful lives and are removed from service, and in view of the strict bans on the manufacture and use of PCB or PCB-laden items, Army installations will come into greater compliance with the TSCA regulations. The tendency for additional findings or repeat offenses being cited will diminish as the availability of PCB and PCB-laden items diminishes.

The TSCA regulations have proven stable and in general, have been effectively implemented by the Army. The total count of NOVs issued under TSCA is very low, less than 10 percent of the total number of NOVs received by the Army. And many of the previous NOVs have resulted in the development of effective TSCA management programs at installations.

Only two major TSCA initiatives are underway in the Army today. One is the continuation of the elimination of PCB through the Army Modernization Program. This process appears to be working quite well, as evidenced by the relatively low and declining NOV rate. The other major initiative involves the actions taken to comply with the Army's interpretation of AHERA. Those actions include the inspection of school buildings on Army installations, followed by response actions, as appropriate. Although there is, and will continue to be, extensive activity and expense associated with this AHERA-driven program, the technical activities to be carried out will be done chiefly under Clean Air Act and Occupational Safety and Health Act regulations. Thus, any NOVs will be issued under those provisions rather than under TSCA.

The Army should have a bright outlook regarding TSCA. NOVs can and should be completely eliminated. However, this will depend on ensuring that installation staff members are trained effectively before being handed the responsibility for the TSCA program.

Future TSCA-based regulations will probably continue to fall upon manufacturers rather than upon product users (such as the Army). Therefore, Army environmental managers will need information, not so much on regulatory impact,

but rather, on the Army's progress in eliminating TSCA-regulated materials. In order to track its TSCA status, Army management must record the following information:

- installations having PCB-laden materials in service and an estimated phase-out date for the last item;
- quantities of PCB-laden items in storage and disposed of;
- status of asbestos investigations in schools or at installations; and
- status of asbestos remediation programs, where required.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

The NOVs issued under TSCA can be eliminated swiftly and completely. Two primary obstacles stand in the way: inadequate training of installation staff members responsible for the TSCA program and inadequate coordination with DRMO staff regarding the handling and disposal of PCB material.

We recommend that the Chief, Environmental Compliance Division take the following actions:

- Identify, or sponsor the development of, adequate training programs that will provide installation staff members with the needed skills.
- Solicit the support of the Army's Director for Environmental Protection and the Deputy Assistant Secretary of the Army for the Environment for the promulgation of Army regulations requiring that staff members complete such training, or equivalent certification, prior to being designated as installations' responsible individuals.
- Initiate a dialogue with DLA to develop a comprehensive and integrated waste management system that includes PCB management and that facilitates coordinated actions between Army installation staffs and DRMO staffs.

APPENDIX A

DEFENSE ENVIRONMENTAL STATUS REPORT
DATA COLLECTION SHEETS

DEFENSE ENVIRONMENTAL STATUS REPORT
DATA COLLECTION SHEETS

TABLE A-1

DESR TABLE 6-A, PRE-1988 VERSION

PCB Inventory Summnanary – Army Component

Period covered: CY87 **Component: _____**

PCB inventory data (units in gallons, except as noted)	Units (in gallons, except as noted	
	Last period	Current period
For PCB for which the Component is accountable A. Quantity of PCB liquid in storage for disposal 1. PCB liquid (greater than 500 ppm PCB) B. Quantity (cubic feet) of PCB-contaminated solid wastes in storage for disposal		
For PCB for which the DPDO is accountable A. Quantity of PCB liquid in storage for disposal 1. PCB liquid (greater than 500 ppm PCB) B. Quantity (cubic feet) of PCB-contaminated solid wastes in storage for disposal		
For DLA only. Cumulative data on PCB disposed of and contract costs A. Quantity greater than 50 ppm PCB disposed of B. Quantity less than 50 ppm PCB disposed of C. Amount of PCB wastes and PCB-contaminated soil disposed of D. Costs of PCB disposal		

Note: PCB = polychlorinated biphenyl; ppm = parts per million; DPDO = Defense Property Disposal Office; and DLA = Defense Logistics Agency.

PCB inventory data (units in gallons, except as noted)	Units (in gallons, except as noted)	
	Last period	Current period
Quantity of PCB still in use (the Services and DLA)		
A. Liquids		
1. Greater than 500 ppm of PCB		
2. Between 50 and 500 ppm of PCB		
B. Solids (PCB articles, rags, and debris)		
1. Greater than 500 ppm of PCB		
2. Between 50 and 500 ppm of PCB		
Quantity of PCB disposed of by Services themselves		
A. Liquids		
1. Greater than 500 ppm of PCB		
2. Between 50 and 500 ppm of PCB		
B. Solids (PCB articles, rags, and debris)		
1. Greater than 500 ppm of PCB		
2. Between 50 and 500 ppm of PCB		
For DLA only. Quantity of PCB disposed of by DLA		
A. Liquids		
1. Greater than 500 ppm of PCB		
2. Between 50 and 500 ppm of PCB		
B. Solids (PCB articles, rags, and debris)		
1. Greater than 500 ppm of PCB		
2. Between 50 and 500 ppm of PCB		
3. Quantity less than 50 ppm PCB disposed of		

Note: PCB = polychlorinated biphenyl; ppm = parts per million; DPDO = Defense Property Disposal Office; and DLA = Defense Logistics Agency.

APPENDIX B

SUMMARY OF HISTORICAL *DEFENSE ENVIRONMENTAL STATUS REPORT* DATA

SUMMARY OF HISTORICAL *DEFENSE ENVIRONMENTAL STATUS REPORT* DATA

TABLE B-1

SUMMARY OF DESR TRENDS: ALL REPORTING MAJOR COMANDS

PCB liquid in storage for disposal (gallons)						
Major Commands	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**
WESTCOM	0	70	255	995	1,000	0
USMA	0	0	0	0	0	0
ISC	1,880	2,000	100	199	0	0
TRADOC	4,387	16,713	17,813	3,723	0	0
MTMC	0	0	0	0	0	0
MDW	0	0	0	300	0	0
INSCOM	127	127	0	0	0	0
HSC	84	84	0	50	0	0
AMC	8,437	10,822	0	15,447	0	0
FORSCOM	2,450	1,032	0	4,772	0	0
ARNG	0	812	0	112	0	0
Total	17,365	31,660	18,523	25,598	1,000	0
Army DESR	17,635	31,660	0	25,486	0	0
Difference	(270)	0	18,523	112	1,000	0
PCB liquid (greater than 50 ppm of PCB)						
Major Commands	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**
WESTCOM	0	70	22	995	1,000	0
USMA	0	0	0	0	0	0
ISC	0	0	100	5	0	0
TRADOC	3,917	16,202	21	4,353	0	0
MTMC	0	0	339	0	0	0
MDW	0	0	0	40	0	0
INSCOM	0	0	0	52	0	0
HSC	69	69	160	50	0	0
AMC	2,782	4,769	21,250	27,388	0	0
FORSCOM	2,450	1,032	268	2,715	0	0
ARNG	0	812	31	110	0	0
Total	9,218	22,954	22,191	35,708	1,000	0
Army DESR	9,218	22,954	40,315	35,598	0	0
Difference	0		(18,124)	110	1,000	0

Note: A glossary of acronyms is located in Appendix D.

TABLE B-1

SUMMARY OF DESR TRENDS: ALL REPORTING MAJOR COMMANDS (Continued)

PCB solid waste in storage for disposal (gallons)						
Major Commands	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**
WESTCOM	0	10	0	729	28	0
USMA	0	0	0	0	0	0
ISC	0	0	10	2	0	0
TRADOC	373	895	0	122	0	0
MTMC	0	0	0	0	0	0
MDW	0	0	0	76	0	0
INSCOM	0	0	7	0	0	0
HSC	0	0	0	1	0	0
AMC	70,292	30,498	389,548	52,292	0	0
FORSCOM	568	139	114	59	0	0
ARNG	0	0	0	12,902	0	0
Total	71,233	31,542	389,679	66,183	28	0
Army DESR	71,233	31,542	389,722	53,281	0	0
Difference	0	0	(43)	12,902	28	0
PCB liquid in storage for disposal (gallons)						
Major Commands	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**
WESTCOM	0	0	0	0	0	0
USMA	0	0	0	0	0	0
ISC	0	0	0	0	0	0
TRADOC	18,836	17,336	0	2,570	0	0
MTMC	2,119	0	0	0	0	0
MDW	0	0	0	300	0	0
INSCOM	0	0	0	0	0	0
HSC	59	0	0	0	0	0
AMC	6,125	7,267	0	2,491	0	0
FORSCOM	16,176	11,009	0	8,933	0	0
ARNG	0	0	0	0	0	0
Total	43,315	35,612	0	14,294	0	0
Army DESR	43,315	35,612	0	14,294	0	0
Difference	0	0	0	0	0	0

TABLE B-1

SUMMARY OF DESR TRENDS: ALL REPORTING MAJOR COMMANDS (Continued)

PCB liquid in storage for disposal (gallons)						
Major Commands	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**
WESTCOM	0	0	0	0	0	0
USMA	0	0	0	0	0	0
ISC	0	0	0	0	0	0
TRADOC	18,836	17,336	0	2,570	0	0
MTMC	2,119	0	0	0	0	0
MDW	0	0	0	300	0	0
INSCOM	0	0	0	0	0	0
HSC	59	0	0	0	0	0
AMC	6,125	7,267	0	2,491	0	0
FORSCOM	16,176	11,009	0	8,933	0	0
ARNG	0	0	0	0	0	0
Total	43,315	35,612	0	14,294	0	0
Army DESR	43,315	35,612	0	14,294	0	0
Difference	0	0	0	0	28	0
PCB liquid in storage (greater than 50 ppm of PCB)						
Major Commands	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**
WESTCOM	0	0	0	0	0	0
USMA	0	0	0	0	0	0
ISC	0	0	0	0	0	0
TRADOC	186,664	17,043	4,185	2,182	0	0
MTMC	2,119	0	0	0	0	0
MDW	0	0	0	40	0	0
INSCOM	0	0	0	0	0	0
HSC	0	0	0	0	0	0
AMC	3,687	3,132	5,884	4,441	0	0
FORSCOM	16,176	433	0	5,176	0	0
ARNG	0	0	0	0	0	0
Total	208,646	20,608	10,069	11,839	0	0
Army DESR	40,646	31,184	11,439	11,839	0	0
Difference	0	(10,576)	(1,370)	0	0	0

TABLE B-1

SUMMARY OF DESR TRENDS: ALL REPORTING MAJOR COMMANDS (Continued)

PCB solid waste in storage for disposal (gallons)						
Major Command	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**
WESTCOM	0	0	0	0	0	0
USMA	0	0	990	0	0	0
ISC	0	0	0	0	0	0
TRADOC	1,660	378	581	67	0	0
MTMC	0	0	0	0	0	0
MDW	0	0	0	76	0	0
INSCOM	0	0	0	0	0	0
HSC	0	0	0	0	0	0
AMC	637	303	1,697	2,453	0	380
FORSCOM	906	0	229	556	0	331
ARNG	0	0	0	0	0	0
Total	3,203	681	3,497	3,152	0	711
Army DESR	3,203	1,114	3,497	3,152	0	0
Difference	0	(433)	0	0	0	711
PCB liquid in storage (greater than 500 ppm of PCB)						
Major Command	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**
WESTCOM	0	0	0	0	0	0
USMA	0	0	0	0	0	374
ISC	0	0	0	0	0	2,140
TRADOC	0	0	0	0	0	0
MTMC	0	0	0	0	0	0
MDW	0	0	0	0	0	0
INSCOM	0	0	0	0	0	0
HSC	0	0	0	0	0	291
AMC	0	0	0	0	0	96,767
FORSCOM	0	0	0	0	0	5,152
ARNG	0	0	0	0	0	0
Total	0	0	0	0	0	104,724
Army DESR	0	0	0	0	0	0
Difference	0	0	0	0	0	104,724

TABLE B-1

SUMMARY OF DESR TRENDS: ALL REPORTING MAJOR COMMANDS (Continued)

PCB liquid in storage (between 50 and 500 ppm of PCB)						
Major Command	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**
WESTCOM	0	0	0	0	0	0
USMA	0	0	0	0	0	5,794
ISC	0	0	0	0	0	500
TRADOC	0	0	0	0	0	0
MTMC	0	0	0	0	0	0
MDW	0	0	0	0	0	0
INSCOM	0	0	0	0	0	0
HSC	0	0	0	0	0	52
AMC	0	0	0	0	0	34,709
FORSCOM	0	0	0	0	0	2,810
ARNG	0	0	0	0	0	0
Total	0	0	0	0	0	43,865
Army DESR	0	0	0	0	0	0
Difference	0	0	0	0	0	43,865
PCB solid in storage (greater than 500 ppm of PCB)						
Major Command	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**
WESTCOM	0	0	0	0	0	29,672
USMA	0	0	0	0	0	0
ISC	0	0	0	0	0	12,987
TRADOC	0	0	0	0	0	0
MTMC	0	0	0	0	0	0
MDW	0	0	0	0	0	0
INSCOM	0	0	0	0	0	0
HSC	0	0	0	0	0	0
AMC	0	0	0	0	0	32,380
FORSCOM	0	0	0	0	0	5,580
ARNG	0	0	0	0	0	0
Total	0	0	0	0	0	80,619
Army DESR	0	0	0	0	0	0
Difference	0	0	0	0	0	80,619

TABLE B-1

SUMMARY OF DESR TRENDS: ALL REPORTING MAJOR COMMANDS (Continued)

PCB solid in storage (between 50 and 500 ppm of PCB)						
Major Command	1984	1985	1986	1987	1988	1989
WESTCOM	0	0	0	0	0	0
USMA	0	0	0	0	0	0
ISC	0	0	0	0	0	0
TRADOC	0	0	0	0	0	0
MTMC	0	0	0	0	0	0
MDW	0	0	0	0	0	0
INSCOM	0	0	0	0	0	0
HSC	0	0	0	0	0	1
AMC	0	0	0	0	0	75,195
FORSCOM	0	0	0	0	0	7,440
ARNG	0	0	0	0	0	0
Total	0	0	0	0	0	82,635
Army DESR	0	0	0	0	0	0
Difference	0	0	0	0	0	82,635
PCB liquid disposed of (greater than 500 ppm of PCB)						
Major Commands	1984	1985	1986	1987	1988	1989
WESTCOM	0	0	0	0	0	0
USMA	0	0	0	0	0	0
ISC	0	0	0	0	0	0
TRADOC	0	0	0	0	0	0
MTMC	0	0	0	0	0	0
MDW	0	0	0	0	0	0
INSCOM	0	0	0	0	0	0
HSC	0	0	0	0	0	23
AMC	0	0	0	0	0	19,340
FORSCOM	0	0	0	0	0	20
ARNG	0	0	0	0	0	0
Total	0	0	0	0	0	19,383
Army DESR	0	0	0	0	0	0
Difference	0	0	0	0	0	19,383

TABLE B-1

SUMMARY OF DESR TRENDS: ALL REPORTING MAJOR COMMANDS (Continued)

PCB liquid disposed of (between 50 and 500 ppm of PCB)						
Major Commands	1984	1985	1986	1987	1988	1989
WESTCOM	0	0	0	0	0	1,558
USMA	0	0	0	0	0	0
ISC	0	0	0	0	0	0
TRADOC	0	0	0	0	0	0
MTMC	0	0	0	0	0	0
MDW	0	0	0	0	0	0
INSCOM	0	0	0	0	0	0
HSC	0	0	0	0	0	37
AMC	0	0	0	0	0	0
FORSCOM	0	0	0	0	0	1,876
ARNG	0	0	0	0	0	0
Total	0	0	0	0	0	3,471
Army DESR	0	0	0	0	0	0
Difference	0	0	0	0	0	3,471
PCB solid disposed of (greater than 500 ppm of PCB)						
Major Commands	1984	1985	1986	1987	1988	1989
WESTCOM	0	0	0	0	0	7,157
USMA	0	0	0	0	0	0
ISC	0	0	0	0	0	250
TRADOC	0	0	0	0	0	0
MTMC	0	0	0	0	0	0
MDW	0	0	0	0	0	0
INSCOM	0	0	0	0	0	0
HSC	0	0	0	0	0	0
AMC	0	0	0	0	0	1,030
FORSCOM	0	0	0	0	0	9,781
ARNG	0	0	0	0	0	0
Total	0	0	0	0	0	18,218
Army DESR	0	0	0	0	0	0
Difference	0	0	0	0	0	18,218

TABLE B-1

SUMMARY OF DESR TRENDS: ALL REPORTING MAJOR COMMANDS (Continued)

PCB solid disposed of (between 50 and 500 ppm of PCB)						
Major Commands	1984	1985	1986	1987	1988	1989
WESTCOM	0	0	0	0	0	4,960
USMA	0	0	0	0	0	0
ISC	0	0	0	0	0	0
TRADOC	0	0	0	0	0	0
MTMC	0	0	0	0	0	0
MDW	0	0	0	0	0	0
INSCOM	0	0	0	0	0	0
HSC	0	0	0	0	0	0
AMC	0	0	0	0	0	102,400
FORSCOM	0	0	0	0	0	0
ARNG	0	0	0	0	0	0
Total	0	0	0	0	0	107,360
Army DESR	0	0	0	0	0	0
Difference	0	0	0	0	0	107,360
PCB liquid disposed of by Defense Logistics Agency (greater than 500 ppm of PCB)						
Major Commands	1984	1985	1986	1987	1988	1989
WESTCOM	0	0	0	0	0	0
USMA	0	0	0	0	0	0
ISC	0	0	0	0	0	0
TRADOC	0	0	0	0	0	0
MTMC	0	0	0	0	0	0
MDW	0	0	0	0	0	0
INSCOM	0	0	0	0	0	0
HSC	0	0	0	0	0	0
AMC	0	0	0	0	0	44
FORSCOM	0	0	0	0	0	0
ARNG	0	0	0	0	0	0
Total	0	0	0	0	0	44
Army DESR	0	0	0	0	0	0
Difference	0	0	0	0	0	44

TABLE B-1

SUMMARY OF DESR TRENDS: ALL REPORTING MAJOR COMMANDS (Continued)

PCB liquid disposed of by DLA (between 50 and 500 ppm of PCB)						
Major Commands	1984	1985	1986	1987	1988	1989
WESTCOM	0	0	0	0	0	0
USMA	0	0	0	0	0	7,040
ISC	0	0	0	0	0	0
TRADOC	0	0	0	0	0	0
MTMC	0	0	0	0	0	0
MDW	0	0	0	0	0	0
INSCOM	0	0	0	0	0	0
HSC	0	0	0	0	0	0
AMC	0	0	0	0	0	219
FORSCOM	0	0	0	0	0	150
ARNG	0	0	0	0	0	0
Total	0	0	0	0	0	7,409
Army DESR	0	0	0	0	0	0
Difference	0	0	0	0	0	7,409
PCB solid disposed of by DLA (greater than 500 ppm of PCB)						
Major Commands	1984	1985	1986	1987	1988	1989
WESTCOM	0	0	0	0	0	0
USMA	0	0	0	0	0	0
ISC	0	0	0	0	0	0
TRADOC	0	0	0	0	0	0
MTMC	0	0	0	0	0	0
MDW	0	0	0	0	0	0
INSCOM	0	0	0	0	0	0
HSC	0	0	0	0	0	0
AMC	0	0	0	0	0	9,957
FORSCOM	0	0	0	0	0	0
ARNG	0	0	0	0	0	0
Total	0	0	0	0	0	9,957
Army DESR	0	0	0	0	0	0
Difference	0	0	0	0	0	9,957

TABLE B-1

SUMMARY OF DESR TRENDS: ALL REPORTING MAJOR COMMANDS (Continued)

PCB solid disposed of by DLA (between 50 and 500 ppm of PCB)						
Major Commands	1984	1985	1986	1987	1988	1989
WESTCOM	0	0	0	0	0	0
USMA	0	0	0	0	0	144,740
ISC	0	0	0	0	0	0
TRADOC	0	0	0	0	0	0
MTMC	0	0	0	0	0	0
MDW	0	0	0	0	0	0
INSCOM	0	0	0	0	0	0
HSC	0	0	0	0	0	0
AMC	0	0	0	0	0	0
FORSCOM	0	0	0	0	0	0
ARNG	0	0	0	0	0	0
Total	0	0	0	0	0	144,740
Army DESR	0	0	0	0	0	0
Difference	0	0	0	0	0	144,740

APPENDIX C

CASE STUDIES: BACKGROUND REASONS FOR RECEIVING NOTICES OF VIOLATION

CASE STUDIES: BACKGROUND REASONS FOR RECEIVING NOTICES OF VIOLATION

The cases discussed below explain the circumstances that led to NOVs.[1]

CASE 1

Violation

- Finding

  Failure to mark PCB area access door

- Regulation violated

  40 CFR 761.40 (j) (1).

Facts

A properly labeled, fully enclosed, PCB-contaminated transformer was located in a controlled access area approximately 3 to 5 feet from the gate. State regulatory inspections under the Toxic Substances Control Act (TSCA) had been performed on the site previously. The state inspector agreed that the label located on the transformer was visible from the gate, so no label was needed on the gate.

A subsequent inspection was performed by another inspector, who cited the missing label on the gate as a violation of the TSCA's regulatory requirements. Although the deficiency was corrected on the spot by the environmental coordinator, an NOV was issued.

The environmental staff did not really understand the requirement; otherwise, the gate would have been labeled in the first place. The staff failed to realize that the regulations specify the minimum requirement for compliance and that a regulator's verbal agreement or assent will not stand the test of time.

Root Causes

- (K) Lack of environmental knowledge
- (R) Regulator error (or change of regulator).

---

[1]See Table 3-1 for an explanation of the codes that precede the "Root Causes."

CASE 2

Violation

- Finding

  Failure to document PCB destruction

- Regulations violated
  - 40 CFR Part 761.65 (a)
  - 40 CFR Part 761.79 (a)
  - 40 CFR Part 761.180 (a).

Facts

In compliance with 40 CFR Part 761 and subpart 671.60, this installation inventoried on-site PCB transformers and conducted removal and retrofill. The internal PCB dielectric fluids were drained into proper containers for holding until proper disposal could be performed. Next, the transformers were flushed with kerosene solvent/rinseate for the purpose of removing any additional PCB that might have remained inside the transformer. In accordance with 40 CFR 761.60 (g), proper samples were taken to characterize the kerosene rinseate.

The retrofill procedures were being performed at an off-site DRMO facility. After the operations were completed, the flushing fluids were stored in six containers for storage with the intent of reusing the flushing solvent for later retrofill operations. The drained dielectric fluids were moved off site and proper disposal was performed. However, the rinseate (now PCB-contaminated) was not picked up and handled as PCB material or waste.

During a periodic regulatory inspection under the TSCA, a state regulator cited the installation for failure to document the disposal of the remaining kerosene solvent, but the text of the NOV made it clear that the real deficiency was the failure to dispose of the solvent at all, i.e., storing it beyond the prescribed 1-year limit.

The installation's environmental staff handled the PCB materials properly until they lost sight of them. The off-site location of the DRMO made it easy for the installation staff to forget about the material, especially in the absence of effective communications or reporting between the installation and the DRMO.

Root Causes

- (K) Lack of environmental knowledge
- (L) Lack of coordination between the DRMO and installation.

CASE 3

Violation

- Finding

  Failure to remove a PCB-laden Item from storage in accordance with applicable regulations

- Regulation violated

  40 CFR, 761.65 (a).

Facts

In accordance with 40 CFR Part 761, all on-site PCB and PCB-contaminated transformers were inventoried, characterized, and disposed of. The DRMO was used to handle the disposal of the identified PCB and the PCB-contaminated transformers.

During a follow-up inventory, a PCB transformer that had been missed during the initial inspection was identified. Following previous procedures, the transformer was sent to DRMO but no disposal occurred. The transformer's disposition was not followed up on by the environmental staff. During a state TSCA inspection, the inspector found the transformer, which had been stored more than 1 year. An NOV was issued.

The installation's environmental staff did not ensure that proper disposal was performed, chiefly as a result of failing to follow up on the applicable manifest or disposition documents. That oversight, coupled with the DRMO's failure to dispose of the transformer, resulted in retention of the transformer beyond the 1-year limit.

Root Causes

- (K) Lack of environmental knowledge
- (D) DRMO-installation coordination failure.

CASE 4

Violation

- Findings
  - Inspection not done at proper intervals
  - PCB contamination around transformer
  - Required documents missing
- Regulations violated
  - 40 CFR 761.30 (a)(2)(ix)
  - 40 CFR 761.30 (a)(2)(x)
  - 40 CFR 761.180 (a).

Facts

The installation had hired a contractor to handle the removal of PCB and PCB-contaminated transformers. At the direction of the installation staff, the contractor held one transformer that had never been used. The transformer was stored on a pallet in a controlled access area for possible use as a replacement should another transformer fail. The goal was to keep the transformer until complete replacement with non-PCB-laden transformers could be completed.

The installation's environmental staff conducted periodic inspections of the transformer but failed to document those inspections. Later, an NOV was issued for failure to conduct inspections at proper intervals, because the installation's staff could not provide any documentation that the inspections had occurred. Although the contractor who was hired to handle the removal of the PCB transformers should have removed that last transformer, it did not, and the staff was aware of this (otherwise, they could not have conducted the inspections).

During the inspection, an additional PCB transformer was found to have a stained area on the outside drain plug. Aside from the fact that the staining should have been cleaned off, the lack of records made it impossible to say that a leak or spill had *not* occurred, or when it might have happened. The regulator assumed the worst-case scenario.

The installation environmental staff neglected to keep records required to document that periodic inventories and inspections were performed. They also failed to follow contract performance through to completion.

Root Causes

- (K) Lack of environmental knowledge
- (C) Contract management failure.

CASE 5

Violation

- Findings
  - PCB capacitor use in non-restricted access area
  - Capacitor release of two gallons of PCB (constitutes disposal)
- Regulations violated
  - 40 CFR 761.30 (l)(1)
  - 40 CFR 761.125 (2)(b).

Facts

Twenty-nine smaller installations are supported by this installation for the handling of PCB material. An enhanced preliminary assessment was performed at those 29 installations to identify Resources Conservation and Recovery Act (RCRA) and the TSCA requirements; part of that assessment included an inventory of all PCB and PCB-contaminated transformers and electrical equipment. On one installation, a bank of capacitors was missed during the inventory; they remained unidentified until a call was made to the installation's engineering office to address a leaking transformer.

When an inspection was performed to identify the leak, it was determined that a bank of three capacitors located on a pole above a building was leaking PCB fluid into the building. Additional inspection determined that the leak was not a one-time leak and was probably more extensive than the fluid that was immediately collected from the spill.

The environmental staff notified the state and regional regulatory agencies; two NOVs were issued. The capacitors were in violation of 40 CFR 761.30 (l)(1), which states "After October 1, 1988 the use of PCB Large High Voltage Capacitors and Large Low Voltage Capacitors is prohibited unless used within a controlled access electrical substation or indoor electrical substation."

The environmental staff, not knowing of the existence of the capacitors, did not remove them. Human error in conducting an inventory was the real cause of this NOV.

Root Cause

(I) Inventorying failure.

CASE 6

Violation

- Finding

  Failure to notify the Environmental Protection Agency of PCB waste-generation activities

- Regulations violated
  - 40 CFR 761.60 (e)(2)
  - 40 CFR 761.60 (h)(1)
  - 40 CFR 761.202 (a)(1)
  - 40 CFR 761.205 (a)(1).

Facts

In compliance with TSCA regulations, this installation conducted an inventory to identify all PCB and PCB-contaminated transformers. Sampling was performed to identify all transformers with concentrations of PCB greater than 500 parts per million (ppm). All of the installation's transformers were identified as a result of this initial inventory. Subsequent to the inventory, the installation staff failed to review or update its inventory and it failed to provide required reports to EPA concerning disposal of PCB-laden items. During a regulatory inspection, these failures were identified and cited.

An additional problem identified was that the retrofill operations were performed in a building with a dirt floor. The transformers were placed on steel pans while they were drained. They remained in the pans until they were removed. Although no risk of leakage was apparent, the containment does not meet TSCA standards. Now the installation must characterize the soils in this building to ensure that no contamination occurred. Although it is not anticipated that an NOV will be issued, the expense of sampling (as a result of failing to follow the regulation originally) will be considerable.

Root Causes

- (K) Lack of environmental knowledge
- (I) Inventorying failure.

CASE 7

Violation

- Findings
  - PCB transformer records not kept 3 years
  - No PCB log book
- Regulations violated
  - 40 CFR 761.180 (a)
  - 40 CFR 761.180 (a)(1).

Facts

Due to the turnover of staff at this installation, no current staff member was employed at the installation at the time the findings were issued. The information we collected was obtained strictly from the installation files.

In the mid-1980s, this installation had no environmental staff. All environmental issues were handled through the Directorate of Engineering and Housing (DEH). The members of DEH were not thoroughly trained about the regulations pertaining to the TSCA, but they identified PCB and PCB-contaminated transformers and disposal anyway. No documentation was completed to certify that proper disposal had been conducted.

An environmental coordinator did not come on staff until 1989. During a regulatory inspection in September 1990, the installation was cited for failure to keep records of PCB-contaminated transformer disposal for 3 years. A more accurate citation would have been that the installation had never documented these operations at all.

Although the initial failure was caused by a lack of knowledge by former staff members, the current environmental staff members should have identified the gross deficiency.

Root Causes

- (K) Lack of environmental knowledge
- (L) Lack of management attention and poor supervision.

CASE 8

Violation

- Finding

  Failure to meet compliance schedule for removal of PCB transformers

- Regulations violated
  - 40 CFR 761.30 (a)(ii)
  - 40 CFR 761.30 (a)(iv)(A).

Facts

In compliance with TSCA regulations, an inventory was performed. The initial inventory identified 36 PCB-laden transformers that regulations required to be removed by 1 October 1990. The environmental coordinator decided that 8 of those transformers did not fall within the regulatory guidelines because they were not located near commercial buildings.

In an inspection conducted after the 1 October 1990 deadline, the state determined that the eight transformers did fall under the guidelines of 40 CFR 761.30 because the nearby building could be considered to house commercial-type activities; therefore, the transformers should have been removed.

The installation's staff members knew about the regulatory requirements. But, having identified potentially regulated equipment, instead of contacting the regulatory agent to gain concurrence on the building classification, they chose to develop their own interpretation of the regulations. Their interpretation was found to be in error.

Root Cause

(K) Lack of environmental knowledge.

CASE 9

Violation

- Findings
  - Inspection records missing
  - PCB transformer not registered with fire department
  - Inadequate storage building for PCB
  - Annual inspection not recorded for 2 years
  - Annual report improperly prepared
- Regulations violated
  - 40 CFR 761.30 (a)(ix)
  - 40 CFR 761.30 (a)(vi)
  - 40 CFR 761.65 (b)(1-4)
  - 40 CFR 761.30 (a)(i)
  - 40 CFR 761.30 (a)(ix).

Facts

An inventory was performed to identify all PCB and PCB-contaminated transformers for characterization and disposal. All such transformers were then disposed of. The installation stopped using PCB and PCB-laden items.

At the same time, the installation designed and built a facility to serve as a hazardous waste storage point meeting RCRA standards. TSCA facilities differ from RCRA facilities because they are required to be fully enclosed; the RCRA facility building had only three walls. A request was submitted for construction funding to build a TSCA facility, but the project was designated as a low priority and funding was never made available.

Later, the installation began receiving PCB-laden materials from other supported installations. Still not possessing a TSCA-specific facility, the installation staff stored the PCB material in its RCRA facility. The installation handled the disposal of those materials the same way they handled their own some years before,

and they used the same documentation methods as used in the past. Events within the regulatory world, however, had moved beyond the staff's knowledge.

In a subsequent regulatory inspection, it was determined that PCB destruction was not properly documented and that the required record logs were not maintained. The installation was not using the authorized EPA reporting forms and had not documented annual inspections. Their reports were difficult to retrieve and in sloppy condition. The installation staff had neglected to register the incoming transformers with the fire department. The facility used for storage, not being fully enclosed, did not meet TSCA's facility specifications. At the time of the inspection, no transformers were being stored there, but the violations were issued for past practices (and current procedure).

The installation's staff was unaware of the regulatory requirements in several areas, but they had officially requested funding support for the construction of a building meeting TSCA specifications. Failure to assign appropriate priority to that project was caused by management shortsightedness.

Root Causes

- (K) Lack of environmental knowledge
- (L) Lack of management attention and poor staff supervision
- (F) Lack of funding.

CASE 10

Violation

- Finding

  Incomplete PCB removal process

- Regulations violated
  - 40 CFR 761.30 (a)(ii)
  - 40 CFR 761.30 (a)(iv)(A).

Facts

This installation, a manufacturing plant in the 1940s, had used several types of fluids that contained levels of PCB. The practices of chemical and worker safety in that era were questionable by today's standards. The PCB-laden fluids were allowed to drain into pans on the floors; they often overflowed the pans. The fluids were used for operations. They were sprayed or spilled and came into contact with hot surfaces, whereupon the chemicals volatilized. The passive ventilation patterns at the facility forced the sprays and volatilized chemicals upward and through large ceiling openings. When the chemicals came into contact with the cooler surfaces of the ceiling, they solidified, creating a caked film that remained on the ceiling.

In the late 1970s and early 1980s (years after the facility was closed), the decision was made to renovate the building to make office space. When the heavy machining equipment was removed, it was found that the wood plank floor was saturated with PCB-laden chemicals. Limited testing was performed and samples were taken to evaluate the extent of PCB contamination in the wooden planks. On the basis of the installation's (possibly flawed) interpretation of the existing regulations at the time of the operations, it was determined that (other than the planks) the area was "clean" (i.e., did not exceed 500 ppm of PCB as opposed to the 50 ppm standard in place today). The planks were to be removed by a contractor and disposed of in a solid waste landfill.

The cleanup operations were eventually stopped when it was decided that the office space idea should be abandoned. By then, approximately 20 percent of all the contaminated planks had been removed.

Possibly stimulated by a tip-off several years later, the EPA regulators went on site to perform a TSCA inspection. Sample wipes were taken of the floor and it was determined that the PCB levels exceeded those allowed for facilities built prior to 1987.

The installation established a contract for the cleanup of the facility in late 1991. Actual work did not commence until early 1992. The installation is still in the process of cleaning the facility.

The environmental coordinator identified several additional shortcomings of the cleanup contract. The staff had not understood all of the ramifications involved in those types of contracts; thus, they did not insist on certain provisions to protect the interests of the installation. Additionally, the contract failed to address all of the cleanup requirements specified in the TSCA regulations because they were not completely understood by the environmental staff. When the contract was originally issued, the contractor was required only to clean the walls up to 8 feet from the floor, thus neglecting the additional chemicals found caked-on the ceiling. Additionally, the contract specified contamination removal only to a "visibly clean" criterion. The contract also neglected the soil beneath the wooden planks, which had become contaminated over the years as the PCB-laden chemicals leaked between the wooden planks. As a result, the installation incurred unexpected and significant extra expense to meet the additional work required.

An additional area of potential contamination was identified in the sewer pipes below the building. This specific issue has not been acted on by the regional EPA office, but it probably will be. The current coordinator says that had the installation initially looked at the physical aspects of the building and the cleanup requirements for undertaking the renovation, the best course of action would have been to demolish the building instead.

Root Causes

- (K) Lack of environmental knowledge
- (S) Changed environmental standards
- (C) Contract management failure.

CASE 11

Violation

- Findings
  - No annual records of PCB disposition
  - PCB storage area without hazard label
  - Three gearboxes with 50 ppm of PCB, unlabeled
- Regulations violated
  - 40 CFR 761.180 (a) and (j)(1)
  - 40 CFR 761.40 (a)(10)
  - 40 CFR 761.40 (a)(9).

Facts

The installation inventoried, characterized, and subsequently disposed of PCB and PCB contaminates in compliance with TSCA regulations. Proper paperwork was written to address the disposition, and periodic inspections were performed on stored materials. The installation had a facility that met the design criteria for the storage of PCB. Access to this facility was controlled by a chainlink fence with a gate, in compliance with the regulations.

During a regulatory inspection, the installation was cited for failure to prepare proper documentation of PCB disposal and periodic inspections. The installation's staff claims that due to poor filing, staff members were unable to retrieve the data proving compliance.

Stored inside the TSCA facility were three large gearboxes that had contained PCB oils. The gearboxes had been drained for retrofill procedures. During the retrofill, samples were taken to identify the level of contamination inside the gearbox. The analysis indicated that the level was below the 50 ppm limit. However, the regulations require two rounds of sampling, rather than the one round that was performed. Therefore, the inspector contended that the installation could not properly certify the concentration of PCB within the gearboxes as being below the 50 ppm threshold; consequently, the items would have to be treated as PCB-laden

items. This ruling placed the installation in violation of the PCB labeling requirements.

The entry gate to the confined access area was unlabeled (it should have been labeled, regardless of the ruling noted above).

The environmental staff exhibited a general knowledge of the regulatory requirements by completing the necessary inspections and documentation, but they lacked the detailed knowledge necessary to comply with clearly presented requirements.

Root Cause

(K) Lack of environmental knowledge.

CASE 12

Violation

- Findings
  - Incomplete quarterly inspection reports
  - PCB item in storage for more than 1 year
  - Inadequate design of PCB storage area: no curbing
  - Incomplete annual report
- Regulations violated
  - 40 CFR 761.30 (a)(ix)
  - 40 CFR 761.30 (a)(ii)
  - 40 CFR 761.65 (b)(1-4)
  - 40 CFR 761.30 (a)(ix).

Facts

This installation hired a contractor to characterize, inventory, and remove for disposal all PCB and PCB-contaminated transformers. The contractor was not supervised or inspected by the installation's staff. In violation of Federal TSCA regulations, the contractor stored a number of transformers in a building that did not meet TSCA specifications; the contractor did this without telling the installation's environmental staff. Then, the contractor notified the state regulatory agency about the improper storage of the transformers.

State regulators arrived to inspect the installation pursuant to the TSCA and inquired about the status of the stored PCB transformers, about which the installation staff had no knowledge.

The regulator cited the installation for storing the transformers in a noncurbed facility. Obviously, because the installation staff did not know about the transformers, periodic inspections were never performed, nor was the required documentation prepared. The transformers had remained in storage beyond 1 year, in violation of the TSCA regulations.

The installation's staff members failed to oversee the contractor. In addition, they clearly lacked knowledge of the regulations, indicated by their failure to request manifest or final disposition documents from the contractor.

Root Causes

- (K) Lack of environmental knolwedge
- (C) Contract management failure.

CASE 13

Violation

- Finding

  Failure to label a PCB vault

- Regulation violated:

  40 CFR 761.40 (j)(1).

Facts

An inspector identified a vault for a floor-type PCB transformer as having the wrong size label. Corrective action was taken immediately: a 6-inch label was used to replace a 4-inch label.

Root Cause

(No code) human error – lack of attention to detail (regulations were known)

CASE 14

Violation

- Findings
  - Failure to dispose of PCB transformers as required by regulations
  - Leaking PCB transformers
  - Combustible materials located near PCB transformer
  - PCB transformer not registered with fire department
  - Five-gallon drum of PCB waste not disposed of in accordance with regulation
  - Five large capacitors improperly stored
  - Three small PCB capacitors leaking
- Regulations violated
  - 40 CFR 761.30 (a)(ii)
  - 40 CFR 761
  - 40 CFR 761
  - 40 CFR 761
  - 40 CFR 761.30 (a)(ii)
  - 40 CFR 761
  - 40 CFR 761.

Facts

The installation staff members inventoried and characterized PCB and PCB-laden items. Disposition was performed and properly documented. A subsequent regulatory inspection turned up additional PCB-laden items that had not been identified and removed.

In 1992, the EPA performed a multimedia inspection of the installation. The installation had identified two pole-mounted transformers as "weeping." Some dielectric fluid was identified to have stained the outside of the transformers near the drain plug. Because no spills were found near the transformers, the installation had

not classified the incident as "leaks." However, the transformers had not been cleaned.

Loose paper (combustible material) was found near a PCB transformer. The installation had failed to register all in-use PCB transformers with the local fire department, pursuant to its contingency planning. Flushing fluids (rinseate) used to perform retrofill procedures were stored in a number of 5-gallon drums that had been in storage for more than 1 year.

A spill had occurred from five large PCB-contaminated capacitors; the capacitors had been removed from service and were being stored at DRMO in a metal dumpster. No dielectric fluid had been removed. The capacitors were left in the dumpster until disposal could be performed. Additionally, three small capacitors also located at DRMO were leaking. DRMO's contractor had stored them in a metal scrap heap until they could be removed for incineration. Apparently, the DRMO staff had not monitored these activities, trusting the contractors' expertise.

Poor housekeeping techniques, by both the installation staff and DRMO staff, were the cause of a number of NOVs. Proper overseeing of contractor operations could have avoided issuance of some of the NOVs, assuming that the staff had the capacity to identify improper practices.

Root Causes

- (I) Inventorying failure
- (K) Lack of environmental knowledge (from installation and DRMO staff)
- (C) Contract management failure
- (D) DRMO-installation coordination failure.

CASE 15

Violation

- Finding

  Failure to inspect PCB transformer for leakage

- Regulation violated

  40 CFR 761.10 (a)(i).

Facts

The installation had no record of this NOV. Clearly, it was cited as a result of evidence of leakage or staining. From the documentation on file, one can infer that the installation had not maintained effective records. In fact, they had no record of the NOV number, let alone the PCB inspections.

Root Causes

- (K) Lack of environmental knowledge
- (L) Lack of management attention and poor supervision.

CASE 16

Violation

- Finding

  Improperly stored PCB

- Regulation violated

  40 CFR 761.265 (b)(i)(I-IV).

Facts

The installation hired a contractor to inventory, characterize, and perform disposition of PCB and PCB-contaminated transformers. The contractor performed retrofill procedures. The removed dielectric fluid was stored in a concrete igloo until it could be handled by DRMO. The concrete igloo did not have a continuous curb surrounding it to contain any potential spill. The staff should have known that was a requirement. They must have been aware of the regulation because they ensured that the equipment that had been drained was stored on metal pans to contain any leaks.

During a regulatory inspection pursuant to the TSCA, the installation was cited for violating TSCA facility requirements to store PCB in a curbed facility. Subsequent to the issuance of the NOV, a curb was constructed around the igloo to bring it into compliance.

Root Cause

(K) Lack of environmental knowledge.

CASE 17

Violation

- Finding

  Failure to remove stored PCB transformers in a timely manner

- Regulation violated

  40 CFR 761.30 (a)(ii).

Facts

A properly stored PCB was not routinely inspected for compliance, and it was never properly disposed of. These facts were detected in an inspection, but an NOV was not issued.

The installation's staff then requested funding for the removal of the transformer. From the time of the request until final removal, 1 year transpired; then the NOV was issued. The original situation could have been avoided had the installation's staff members been more thorough in their inspections; the actual NOV would have been avoided had the staff been more effective in insisting on the need for funding for this project.

Root Causes

- (K) Lack of environmental knowledge
- (L) Lack of management attention and poor staff supervision
- (F) Lack of funding.

CASE 18

Violation

- Findings
  - Improper PCB cleanup
  - PCB-contaminated rags not properly disposed of
- Regulations violated
  - 40 CFR 761.30 (a)
  - 40 CFR 761.30 (a)(ii).

Facts

The installation coordinator for this installation supports a six-state region containing some 200 reserve installations. On one of the installations, lightning struck one of the three transformers located on a platform, causing the dielectric PCB contents to spill. The spill contaminated the platform and soils beneath the platform. The installation dismantled the transformers and performed proper disposition of the fluid contents and the containers. The coordinator initiated a sampling program to evaluate the extent of the soil contamination.

The installation was cited by the regional office of the EPA for late notification of the spill and delayed cleanup completion. Rags that had been used to decontaminate the platform were not disposed of; instead, they were left in containers beyond the 1-year time limit for the storage of PCBs.

It is noteworthy that even though a spill did occur, no NOV was issued for the pollution incident (over which the installation staff had no control); the citation was issued for failure to perform basic cleanup tasks.

Root Cause

(K) Lack of environmental knowledge.

APPENDIX D

GLOSSARY

GLOSSARY

AHERA	=	Asbestos Hazard Emergency Response Act
AMC	=	Army Materiel Command
ARNG	=	Army National Guard
CFCs	=	chlorofluorocarbons
CFR	=	Code of Federal Regulations
CWA	=	Clean Water Act
DEH	=	Directorate of Engineering and Housing
DESR	=	*Defense Environmental Status Report*
DLA	=	Defense Logistics Agency
DPDO	=	Defense Property Disposal Office
DRMO	=	Defense Reutilization and Marketing Office
EPA	=	Environmental Protection Agency
FORSCOM	=	Forces Command (U.S. Army)
HSC	=	Health Services Command (Army)
INSCOM	=	Information Systems Command
ISC	=	Information Systems Center
MACOM	=	major command
MDW	=	Military District of Washington
MTMC	=	Military Traffic Management Command
NOVs	=	notices of violation
PCB	=	polychlorinated biphenyl
ppm	=	parts per million
RCRA	=	Resources Conservation and Recovery Act

TRADOC	=	Training and Doctrine Command (Army)
TSCA	=	Toxic Substances Control Act
U.S.C.	=	United States Code
USMA	=	U.S. Military Academy
WESTCOM	=	U.S. Army Western Command